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REMARKS

ON THE

INFLUENCE OF THE OCEAN WINDS

IN THE

SOUTH-WESTERN SUB-PYRENEAN BASIN

BY

Dr CAZENAVE DE LA ROCHE

Physician at Pau and Eaux-Bonnes

TRANSLATED FROM THE FRENCH BY RICHARD DE LA MADELAINE.

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The systematic attacks to which the climate of Pau has been subject for some time past, imposes on its defenders the duty of pointing out all such phenomena as may be noticed in its meteorological constitution, thus demonstrating the injustice or groundlessness of the accusations raised against it.

When such attacks are expressed openly in the broad publicity of daylight, like those of Dr Williams for instance, the excellence of our cause makes a refutation easy, and however hostile and unjust the aggressor may be, at least we find he has the courage to maintain his opinions. But what can we do against treacherous insinuations denunciations without reason? What defence is possible against the system of dissua-

ding patients from coming to our town, a system practiced in the privacy of consultation by certain well-known medical men, who were once convinced partisans of the Bearnese resort and have now become its most ardent detractors? Do they mean that our climate is changed? That after being propitious to patients, it has suddenly become murderous, if we use the amiable expression of one of those scientific celebrities? Fortunately, the immutability of the laws which govern the Universe has nothing to do with the instability of human feelings. It is not therefore to all appearances sheer meteorological considerations which have suggested to those adversaries of the climate of Pau that sentence of ostracism which they have pronounced against it.

« Pau is not the South » says in a more mitigated but not less hostile language, one of those princes of science. Tombouctou is doubtless in the opinion of my famous brother in the profession, the ideal of climates, since according to his notions a high temperature alone constitutes a therapeutic value; and, in accordance with this judicious reasoning they send their patients to Cannes, Mentone, or San-Remo rather than to Pau which does not enjoy a sufficiently southern latitude. Let men of the world reason in this manner, nothing is more natural. Nowadays every body thinks he is entitled to talk physic and decide questions which cause old practitioners some hesitation. But when I see men of science overlooking so strangely the indications and counter-indications which proceed from the temper, constitution, nature, form and degree of the disease, including in single classifications all those who are afflicted with the same morbid entity, and indiscriminately sending to the winter-stations of the Mediterranean sea-coast patients to whom the Bearnese Resort ought to be recommended, I confess I am greatly surprised. In fact, what climatic analogy, what similitude in the therapeutic applications can there exist between the stimulating

atmosphere of Cannes, Nice, Mentone, San-Remo and the sedative, depressing air of Pau? Are not the stations of the Mediterranean sea-coast indicated as a matter of course to anemic, lymphatic, and scrofulous patients, whereas the Bearnese Resort eminently suits dry and nervous constitutions, irritable, hemoptoic and erethic patients? Indeed, in the case of a patient to be sent to a southern winter place I ask myself whether an impartial physician possessing the most elementary notions of climatology is permitted to hesitate a single moment in his choice of a medical station.

Nay more : the limits drawn by climatology and clinic observations between the climatic Resorts on the South Eastern and South Western sides of the Sub-Pyrenean basin are so fairly marked out that they must exclude every sort of competition between the two groups : for competition is not reasonably admissible if there be not a certain identily in the mode of constitution and in the condition of the rival elements. Now, we have just observed that the climatic characteristics of the Mediterranean Winter-places is entirely different from that of the Bearnese station. Consequently, in my opinion, it is not only a great mistake to consider the former as rivals to the latter, but it is even prejudicial to the interested party if they designate them as such in books or newspapers for instance. This hostile expression contributes to keep up without any profit a spirit of antagonism or at least of secret jealousy between two blessed sunny regions, called to assist rather than oppose one another.

The following anemographic document and the meteorologic particularities which it sets forth will show better the line of separation between the climates in the South Eastern and South Western stations.

During the whole month of december last, France was covered all over North, South, Centre, East and West with a vast sheet of snow which, in certain parts, letters and newpapers

told us, had acquired a depth unprecedented in meteorologic annals; from all quarters we received mournful recitals of accidents occasioned by the hydrometeor. The departments of Var and the Alpes Maritimes, so justly proud of their bright sky were not saved from it and as well as the whole french territory they shivered for several days under the snow. On the Genoese coast, at San Remo, a station to which, by the way, I was the first to call attention ten years ago, an august Lady-visitor was obliged to take a hurried departure. Along the streets of Florence the sight of sledges caused astonishment and at Naples the Vesuvius appeared one morning dazzling white : a volcano under the snow. Algeria, notwithstanding its warm latitude, was not spared a visit : a thick covering of snow, says *the Journal Officiel*, spread over Algiers and the surrounding villages. At Milianah the snow reached one metre and a half in thickness.

In the midst of this general invasion of the hydrometeor one single spot remained untouched, Pau and its environs, though its three neighbouring departments, the Landes, Gers, Hautes-Pyrénées as well as the Pyrenean chain, imprisoned the Bearnese station in a frozen circle.

How shall we account for this strange immunity? Is it mere chance? Certainly not. In the harmony of creation every thing has its law, its cause. For my own part, I do not hesitate to ascribe both to the anemographic condition of the Bearnese atmosphere. It is to the prevalence of the ocean winds, " those faithful bearers of heat, " as I once called them, that must be attributed the meteorologic phenomenon. Through the relative heat which they communicate to the higher regions of the atmosphere the winds blowing from the Gulf of Gascony keep up the air-water at a degree of temperature sufficiently high to oppose the congealing of the water-vapour diffused in the atmosphere. The result is that instead of crystallizing, the water-vapour precipitates, condenses and it

rains at Pau whilst it snows elsewhere. This every body here was able to observe during the last fortnight of December when the winds of the eastern half card did not cease blowing. Were the town of Pau under different hypsometric conditions and had it had, like the Mediterranean winter-places, instead of its northern and eastern screens, a wide exposure to the dry and cutting influences of the eastern half card it is certain that in that period it would have paid to snow a similar tribute, if not a larger one, considering the vicinity of the mountains? Is it necessary to prove this? When snow happens to fall at Pau it arrives there on the wings of the Northern winds or their concomitants; and, as they take the town as in a sling, on account of the obstacles they find on their way, the hydrometeor has the transitory duration of the winds which have carried it.

I know that rain is scarcely more pleasant than snow. In the opinion of men of the world, it may be so; but to a physician the thing is not indifferent. Besides its frigorigenous action on the ambient temperature of the air, does it not exercise a painful influence over nervous constitutions in particular; over patients afflicted with extreme sensitiveness, and above all over a certain category of phtisis whose sufferings it aggravates? I do not think there exists any constitution however well balanced it may be, which can remain insensible to the irritating action of snow. December last will certainly be, reckoned among the most gloomy and rainy in the year; still the number of deaths compared with that of the other months was never so little and the medical constitution, with the exception of very slight measles, so favourable, It is certain that this would not have been the case, had there been snow.

But, you will doubtless urge the objection, How do you reconcile the influence you attribute to the Ocean winds in the South-Western Sub-Pyrenean basin with the appearance

of snow at the entrance of the same basin. It is true, the hydrometeor has covered the territorial limits which extend from the Atlantic to the district of Peyrehorade. My reply will be easily made; it is implicitly laid down in the special conditions of hypsometry which govern the town of Pau and in the configuration of the Bearnese basin. I will explain this:

The Bearnese station occupies the centre of a vast semi-circle with an opening to the west, the Southern branch of which is formed by the Pyrenean chain, the Eastern side comprises a superposition of hills, Sarrouille, Hez, Lanespede, terminating at the beautiful land-board of Lannemezan. This orographic division, is met by a system of hills ranging one above the other to the East and West in the shape of a protecting screen against the cold influence of the North as far as Peyrehorade, where it ends abruptly in the sandy ocean of the Landes. This screen of hills constitutes the whole Northern side of the semi-circle. We shall see that it plays a considerable part in the question which we are discussing. This large hemicycle does not preserve, as a matter of course, throughout all its development, the same level in altitude. The vertigenous summits of the Pyrenean barrier are succeded by the less elevated mountains of the Eastern sub-structions after which the hypsometric line gradually lowers in proportion as it advances Westward. Let not the reader believe that I am giving a capricious description of the configuration of the Bearnese station; he only need give a look at the hypsometric card of South-Western France to be convinced of the accuracy of my assertions.

These topographic dispositions being clearly established, I come to the point in controvèrsy and then the objection which is made to the part I attribute to the Ocean winds in the formation of snow will vanish at once.

The Western Winds come to our shores franght with the wet heat they have drawn whilst sliding along the Ocean,

that huge reservoir of caloric. But before they can enter the orographic hemicycle I have just described they must previously traverse the sandy zone which stretches from the sea-shore to Peyrehorade, that is an immense alluvial plain, on a level with the ocean, flat, without any declivity and through which the Adour slowly rolls its oily waters. Exposed to all the winds, unsheltered on the North, this Western line of the Basses-Pyrenees, must of a necessity enjoy an average winter temperature inferior to that of the Bearnese station since it is deprived of the screen of hills that protect the latter against the cooling influences of the North. Now what is the consequence? However short and rapid their passage maybe, the Ocean winds coming into contact with this apparently colder temperature, lose part of their caloric in behalf of the northern frigorific influence which predominates in the zone and when the thermic loss these winds sustain is abont zero, snow will fall, such was the case in December last.

To continue; the sea-winds blowing on farther get ingulfed in the large mountainons hemicycle, the centre of which is occupied by the bearnese station. Kept at first from the cooling influence of the North by this screen of hills which form the northern branch of the semi-circle the Ocean winds rapidly assume the ambient temperature of the basin, they recuperate in this way their original temperature and faithful to their mission, bring us rain. This result was produced also in December last. Our meteorologic principle is likewise to be verified in the plain of Tarbes, the oriental limit of the basin circumscribed by the orographic hemicycle. There the Ocean winds cease to blow as they run against the heights of Sarouille and Lanespède which form the imposing substructions of the Lannemezan land-board. There, no more than in the remainder of the basin, not even at Saint-Pé, though the latter place be so near the chronic snows, the hydrometeor

was to be seen. This is the reason why the department of the Hautes-Pyrenees was in some parts, visited by snow in December. The plain of Tarbes was free from it and it could not be otherwise as it was protected by the anemometric law.

I sum up what precedes :

1° The Ocean winds, and I thus designate the South-Western and Western Winds, bring into the bearnese Sub-Pyrenean basin, an amount of caloric and humidity the concentration and duration of which are physically favoured by the particular conditions of hypsometry and the topographic configuration I have just described.

2° It is to the influence of those winds which prevail in the anemography of the Western Sub-Pyrenean region that must be attributed the climatologic constitution of the Bearnese basin and of its winter station, the town of Pau.

3° This climatologic constitution shows itself in a calm and sedative atmosphere, a natural consequence of the protecting hypsometry of the basin as well as of the calorific and hypsometric action of the Ocean winds.

Pau, Impr. Veuve Vignancour.

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